Blood Test Predicts Increased Heart Attack Risk in Elderly

07-05-2005 -- Scientists have discovered that high levels of C-reactive protein (CRP) – an inflammation marker found in blood – can predict an increased risk of heart attack in elderly men and women independent of conventional cardiac risk factors.

These results appear in the July 5 print version of ***Circulation: Journal of the American Heart Association***. Mary Cushman, M.D., associate professor of medicine at the University of Vermont College of Medicine and lead author of the study, and colleagues examined the CRP levels of nearly 4,000 men and women aged 65 and older, who were participants in the Cardiovascular Health Study, a national observational study investigating risk factors for heart disease in the elderly. The participants were followed over a ten-year period. "This is the first long-term prospective study assessing CRP and heart attack risk in the elderly," said Cushman. "In those elderly men and women who had elevated blood CRP, we found a corresponding 45 percent increase in risk of developing coronary heart disease."

The study's 3,971 participants underwent baseline tests to determine blood CRP levels. Twenty-six percent had elevated levels, defined as values of greater than 3 milligrams per liter (mg/L). During 10 years of follow-up, 547 people had a heart attack or coronary heart disease death. Then, the researchers compared the information from the CRP measurement to information gleaned from the conventional risk measurement called the Framingham risk score. This measurement assigns point values to risk factors such as high blood pressure, total cholesterol, HDL or "good" cholesterol, age and smoking history to predict the risk of a heart attack or coronary death during a 10-year period. In men predicted to have a 10 percent to 20 percent chance (intermediate risk) of having a coronary event over the next 10 years based on the Framingham score alone, those with high CRP levels had an actual observed rate of 32 percent. The rate was 17 percent for those with low CRP levels (less than 1 mg/L). And for men in whom the Framingham score predicted a greater than 20 percent chance (high risk) of having a coronary event, the actual rate in those with elevated CRP was 41 percent. The rate was 23 percent for those with low CRP levels.

Among women considered to be at high risk based on the conventional assessment, the CRP test also proved useful, Cushman said. Among women with a predicted rate of greater than 20 percent in 10 years based on the Framingham score, those with high CRP levels actually had about a 31 percent chance of having a heart attack or dying of heart disease. If their CRP level was low, on the other hand, their actual risk of a coronary event was only 16 percent.

"The findings add information to the growing body of evidence on the usefulness of CRP measurements in assessing cardiovascular disease risk," Cushman says. The study was funded by the National Heart, Lung and Blood Institute. In addition to Cushman, co-authors on the study publication include Russell P. Tracy, Ph.D., professor of biochemistry and senior associate dean for research and academic affairs at the UVM

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